Environmental Health Perspectives
Vol. 10, pp. 223–224, 1975

Housing: Introductory Remarks

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About a decade ago I wrote a review of the relations of indoor to outdoor atmospheric conditions (*1*). In the interval, the major substantive contributions in this field have been in the air quality field. A comprehensive review of this area, covering the entire literature since the 1930's has been published by EPA (*2*).

Another rather interesting monograph has just appeared, in which the meteorotropic effects of pressure fluctuations of relatively high frequency on indoor workers in Switzerland are reinvestigated within the framework of research on Föhn effects (*3*). Among the important findings is that the rapid pressure fluctuations penetrate indoors, irrespective of whether or not a room is air-conditioned, and that there exists a notable correlation between the amplitudes of such fluctuations and the frequency of health complaints of a sizable group of persons working in a large building.

It may be useful at this point to recall the penetration of external meteorological variables indoors, their alteration by the man's protective structures, and their deliberate or inadvertent modification, as shown in Table 1.

Table 1. Outdoor–Indoor relations of atmospheric variables.

Uninfluenced by Building
Rapid Electrostatic Field Changes
Electromagnetic Waves
Atmospheric Pressure and Pressure Variations
Eliminated by Building
Wind
Attenuated by Building
Temperature
Humidity
Illumination
Ionization
Radioactivity
Gases and Aerosols
Altered or Created by Human Interference
Temperature
Humidity
Illumination
Ventilation
Ionization
Gases and Aerosols
Radioactivity from Building Materials

The need for energy conservation also makes it expedient to review the desirable, or at least tolerable, indoor environment. There have been in the past many cases when dwellings and offices were overheated and desert-dry in winter. In contrast, summer temperatures were often kept by air conditioning too low for comfort and created an unwelcome shock when one was re-entering the outside world.

Conservation measures may correct some of these evils but may also introduce new ones. Among them is a lowering of air quality because of reduced rates of air exchange with the outside through weather stripping, storm windows, and tighter insulation. Interior combustion processes may then raise the mixing ratios of carbon monoxide and carbon dioxide, a situation that air

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hygienists of last century fought strenuously (*4*). On the other hand, these same measures may keep out outdoor air pollutants, now a much greater menace than hundred years ago in urbanized and industrialized areas.

All of these and other aspects of the biometeorology of indoor spaces require attention and, in many instances re-evaluation. These are matters we want to discuss here.

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